

July 21, 1964

P. A. TEXTOR, SR

3,141,493

PORTABLE STRAIGHTENING DEVICE

Filed Dec. 1, 1961

2 Sheets-Sheet 1

FIG. 2.

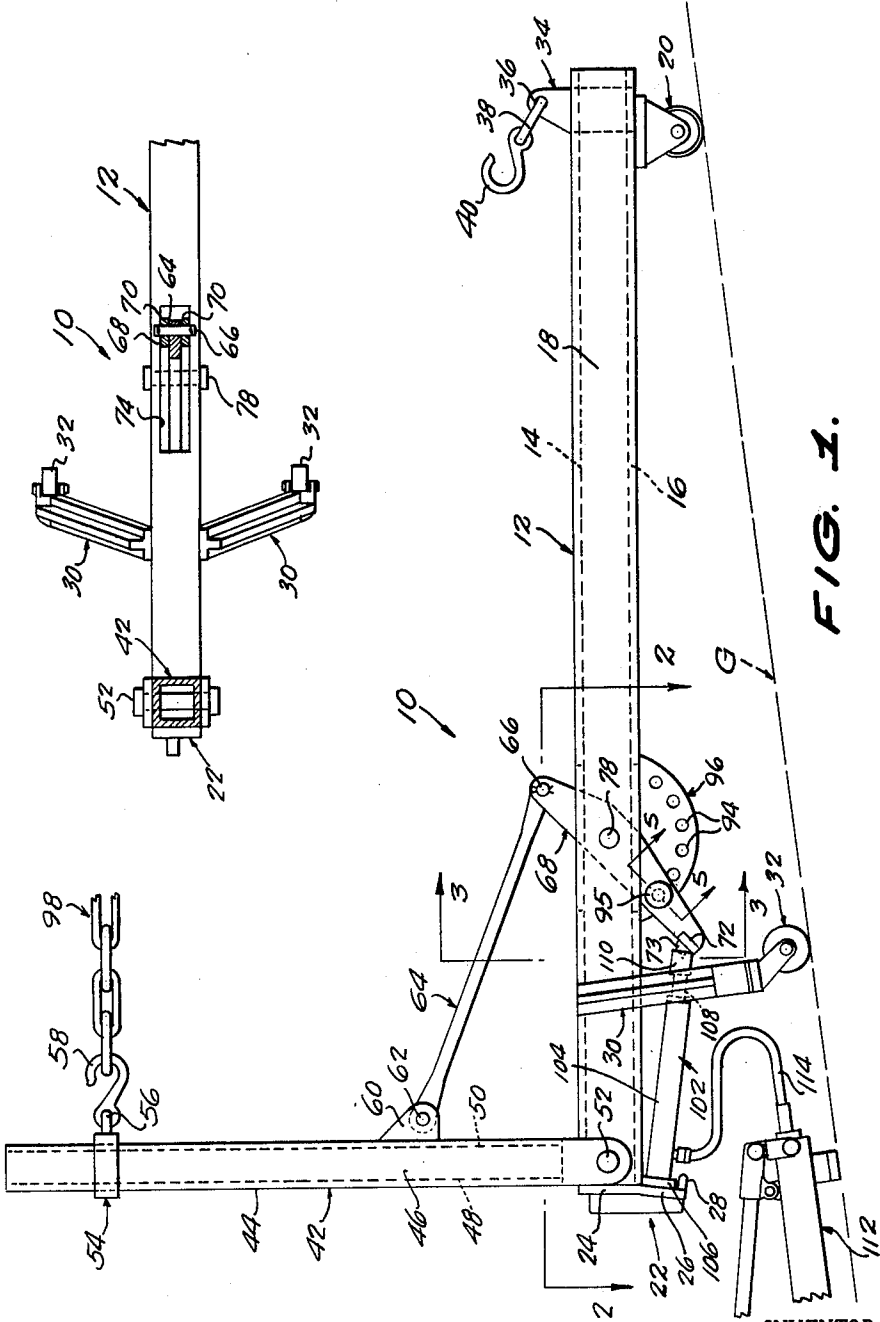


FIG. 1.

INVENTOR.
PAUL A. TEXTOR, SR.

BY

McMorris, Berman & Davidson
ATTORNEYS.

July 21, 1964

P. A. TEXTOR, SR

3,141,493

PORTABLE STRAIGHTENING DEVICE

Filed Dec. 1, 1961

2 Sheets-Sheet 2

FIG. 3.

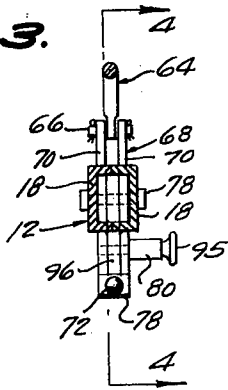


FIG. 4.

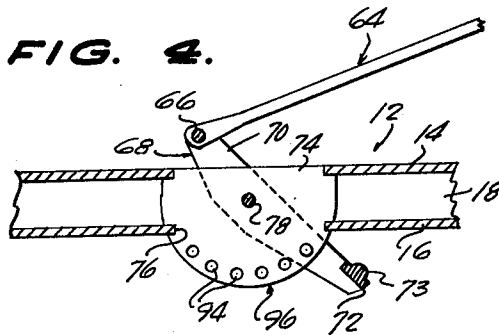


FIG. 5.

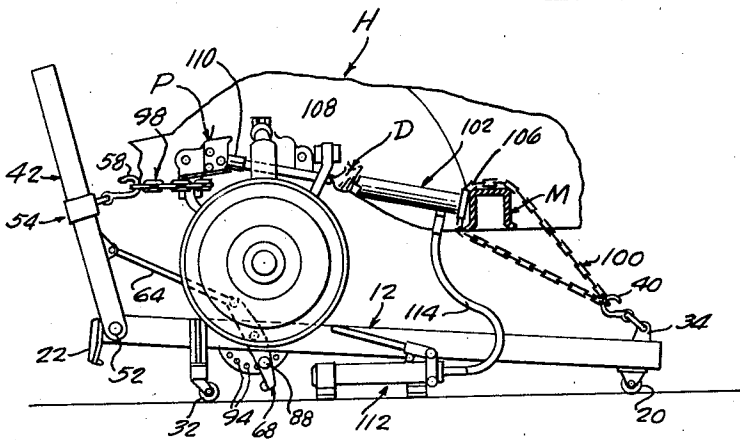
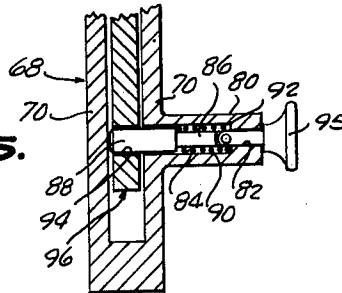


FIG. 6.

INVENTOR.
PAUL A TEXTOR, SR.

BY

McMorris, Permar & Davidson
ATTORNEYS.

1

3,141,493

PORTABLE STRAIGHTENING DEVICE

Paul August Textor, Sr., 4027 Velie St., New Orleans, La.
 Filed Dec. 1, 1961, Ser. No. 156,307
 9 Claims. (Cl. 153—32)

This invention relates to a novel portable device for straightening metal parts, such as components of automobile bodies and frames.

The primary object of the invention is the provision of a simpler, more efficient, and more versatile device of the kind indicated, which is adapted to exert either pull or push for removing dents and bends in metal parts, and which is adapted to exert the combined forces of pull and push where desired.

Another object of the invention is the provision of a device of the character indicated above, which comprises a base on which an upstanding pull-exerting lever is pivoted, and is opposed to an anchor on the base, to which chains secured to a part having a dent to be removed, at opposite sides of the dent, are connected, the position of the lever being determined and retained by a link connected to the lever and to one end of a toggle lever, pivoted on the base, and position locking means associated with the base and the toggle lever, the toggle lever being adapted to be moved for pivoting the pull lever by a hydraulic ram, engaged with the base and the other end of the toggle lever.

A further object of the invention is the provision of a device of the character indicated above, wherein the hydraulic ram is removable from the base, after the toggle lever, and hence the pull lever, have been moved to pull exerting positions, and the part from which a dent is to be repaired is under tension, and positioned between and applied to other portions of the part and extended, so as to combine push with the pull of the pull lever for removing the dent.

Other important objects and advantageous features of the invention will be apparent from the following description and the accompanying drawings, wherein, for purposes of illustration only, a specific form of the invention is set forth in detail.

In the drawings:

FIGURE 1 is a side elevation of a device of the present invention, showing its hydraulic ram applied between its frame and its toggle lever;

FIGURE 2 is a fragmentary horizontal section taken on the line 2—2 of FIGURE 1;

FIGURE 3 is a vertical transverse section taken on the line 3—3 of FIGURE 1;

FIGURE 4 is a fragmentary vertical longitudinal section taken on the line 4—4 of FIGURE 3;

FIGURE 5 is an enlarged fragmentary transverse section taken on the line 5—5 of FIGURE 1; and

FIGURE 6 is a schematic and fragmentary side elevation, on a reduced scale, partly broken away and in section, showing the device used for removing a dent from an automobile wheel housing, the hydraulic ram being removed from the base of the device and applied between a frame cross member, at one side of the dent, and a housing part at the other side of the dent.

Referring in detail to the drawings, wherein like numerals designate like parts throughout the several views, the illustrated device, generally designated 10, comprises a base consisting of an elongated straight horizontal rectangular tube 12 having a top wall 14, a bottom wall 16, and side walls 18. A single caster wheel 20 is secured to and extends downwardly from the bottom wall 16 at the first end of the base tube 12. An abutment 22 is fixed to the second end of the tube 12 and comprises a vertical plate 24 having a lower portion 26, extending below the base tube, at a slight outward angle.

2

The portion 26 has, on its lower end, a transverse stop flange 28.

T-cross section arms 30 are fixed to and extend laterally outwardly from the side walls 18 of the base tube 12, at a location near to and spaced inwardly from the second end of the base tube, and have downwardly extending caster wheels 32 on their outer or free ends. The arms 30 are angled downwardly and laterally outwardly and have a slight inclination toward the first end of the base tube 12. The caster wheels 32 cooperate with the single caster wheel 20 in supporting the device on the ground G, at an acute downward angle toward the first end of the base tube.

A fixed upstanding chain anchor lug 34 extends securably through the top wall 14 of the base tube 12, at its first end, and is provided with an opening 36, through which a ring 38 is engaged, which carries a chain hook 40. Opposed to the anchor lug 34 is a pull lever 42, on the tube 12 at its second end.

The pull lever 42 comprises a straight rectangular tube 44, shorter than the base tube 12, and having side walls 46 and outer and inner end walls 48 and 50, respectively. The side walls 46 extend below the end walls and engage opposite sides of the base tube 12, and are traversed by a pivot bolt 52 which extends through the base tube side walls 18. Slidable along the pull lever 42 is a rectangular ring 54 having an eye 56, on its inner end, on which a chain hook 58 is pivotally engaged. At a point near to and spaced upwardly from the base tube 12, a pair of ears 60 is fixed to the lever 42 and extends inwardly therefrom, between which is pivoted, as indicated at 62, the outer and elevated end of a link 64. The link 64 extends inwardly at a declining angle, and is pivoted, at its depressed inner end, as indicated at 66, to the upper end of a toggle lever 68.

The toggle lever 68 comprises a pair of laterally spaced elongated side plates 70 which are connected together, at their lower ends, by a cross member 72, having a hemispherical boss 73 on its outer side. The toggle lever 68 extends above and below the base tube 12, and through slots 74 and 76, in the top and bottom walls, respectively, of the base tube, the toggle lever being pivoted, at a point above its middle, on a pivot bolt 78 extending through the base tube side walls 18, at a location near to and spaced longitudinally inwardly from the caster wheel arms 30.

As shown in detail in FIGURE 5, one side plate 70 of the toggle lever 68 is provided with a tubular boss 80, whose bore comprises a reduced diameter outer portion 82 and an enlarged diameter inner portion 84, this inner portion 84 opening through the side plate. A stem 86 works through the outer bore portion 82 and extends spacedly through the inner bore portion 84, and has an enlarged diameter locking pin 88, on its inner end, an expanding coil spring 90 being circumposed on the stem 86, and compressed between the pin 88 and a shoulder 92 formed by the meeting of the bore portions, whereby the locking pin 88 is yieldably urged inwardly for locking engagement in one of an arcuate row of detent holes 94 provided in a semi-circular locking plate 96 which is fixed to and extends downwardly from the bottom wall 16 of the base tube 12. The locking plate 96 is positioned between the side plates 70 of the toggle lever 68, and the detent holes 94 are concentric with the toggle lever pivot bolt 78. A handle knob 95 is provided on the outer end of the stem 86.

The location of the pivot bolt 78 relative to the length of the toggle lever 68, puts about two-thirds of the toggle lever below the pivot bolt, with corresponding mechanical advantage, when force is applied to the lower end thereof, for pushing the pull lever 42 in a direction away from the

first end of the base, for exerting pull on a chain 98, secured to the hook 53, in opposition to a chain 100 secured to the anchor lug hook 40.

The toggle lever 68 is adapted to be pushed by a bending force applying means or removable hydraulic ram 102 comprising a cylinder 104 having an outer end 106, adapted to bear against the abutment plate portion 25 above its stop flange 23, as shown in FIGURE 1, and having an inwardly extending piston rod 103 having a head 110, on its inner end, adapted to bear pivotally against the hemispherical boss 73 on the cross member 72 on the lower end of the toggle lever 68. A portable pump 112 can be associated with the ram 102 and connected thereto by a flexible hose 114.

With the chains 98 and 100 secured to spaced points of a metal part to be straightened, at opposite sides of a dent therein, extension of the ram 102 exerts pull in opposite directions, on the part, so as to pull out the dent.

As illustrated in FIGURE 6, in which the part to be straightened is exemplified by an automotive vehicle wheel housing H having a dent D therein, the chain 98 is secured to the housing H, at a point longitudinally outwardly from the dent D, and the chain 100 at a point longitudinally inwardly of the dent, as to an existent cross member M, and pull exerted on the housing H, in the manner hereinabove outlined, and the toggle lever 68 locked, by means of the locking pin 88 engaged in a hole 94 of the locking plate 96, with the chains and the housing under stretched tension. The hydraulic ram 102 can then be removed from the abutment 22 and the toggle lever 68, placed between the cross member M, and a projection P, in the region of the housing H, and longitudinally outwardly of the dent D, and extended, so as to push this part of the housing H away from the cross member M, and thereby combine the pull exerted by the pull lever, and the push exerted by the ram 102, and complete the removal of the dent D.

Although there has been shown and described a preferred form of the invention, it is to be understood that the invention is not necessarily confined thereto, and that any change or changes in the structure of and in the relative arrangements of components thereof are contemplated as being within the scope of the invention as defined by the claims appended hereto.

What is claimed is:

1. A straightening device comprising a horizontal base having first and second ends, an upstanding pull lever pivoted on the base at said second end and having chain attaching means thereon, an upstanding chain anchor lug at the first end of the base, a vertical toggle lever pivoted on the base, at a point near and spaced from the pull lever, a link extending between and pivoted to the pull lever at a point spaced above the base and to the upper end of the toggle lever, said toggle lever having a lower end located below the base, and releasable locking means associated with the toggle lever and the base, said base having a downwardly-extending abutment on its second end, and bending force applying means operatively engaged with said abutment in the lower end of the toggle lever.

2. A straightening device comprising a horizontal base having first and second ends, an upstanding pull lever pivoted on the base at said second end and having chain attaching means thereon, an upstanding chain anchor lug at the first end of the base, a vertical toggle lever pivoted on the base at a point near and spaced from the pull lever, a link extending between and pivoted to the pull lever at a point spaced above the base and to the upper end of the toggle lever, said toggle lever having a lower end located below the base, and releasable locking means associated with the toggle lever and the base, said base having a downwardly extending abutment on its second end, and a hydraulic ram extending between and operatively engaged with said abutment and the lower end of the toggle lever.

3. A straightening device comprising a horizontal base having first and second ends, an upstanding pull lever pivoted on the base at said second end and having a chain attaching means thereon, an upstanding chain anchor lug at the first end of the base, a vertical toggle lever pivoted on the base at a point near and spaced from the pull lever, a link extending between and pivoted to the pull lever at a point spaced above the base and to the upper end of the toggle lever, said toggle lever having a lower end located below the base, and releasable locking means associated with the toggle lever and the base, said base having a downwardly-extending abutment on its second end, bending force applying means operatively engaged with said abutment in the lower end of the toggle lever, and caster wheel means on and extending downwardly from the base and supporting the base rollably upon and spaced above a surface.

4. A straightening device comprising a horizontal base having first and second ends, an upstanding pull lever pivoted on the base at said second end and having a chain attaching means thereon, an upstanding chain anchor lug at the first end of the base, a vertical toggle lever pivoted on the base at a point near and spaced from the pull lever, a link extending between and pivoted to the pull lever at a point spaced above the base and to the upper end of the toggle lever, said toggle lever having a lower end located below the base, and releasable locking means associated with the toggle lever and the base, said base having a downwardly-extending abutment on its second end, bending force applying means operatively engaged with said abutment in the lower end of the toggle lever, and caster wheel means on and extending downwardly from the base and supporting the base rollably upon and spaced above a surface, comprising a single caster wheel at the first end of the base, and a pair of outriding caster wheels located near to and spaced from the first end of the base.

5. A straightening device comprising a horizontal base having first and second ends, an upstanding pull lever pivoted on the base at said second end and having a chain attaching means thereon, and upstanding chain anchor lug at the first end of the base, a vertical toggle lever pivoted on the base at a point near and spaced from the pull lever, a link extending between and pivoted to the pull lever at a point spaced above the base and to the upper end of the toggle lever, said toggle lever having a lower end located below the base, and releasable locking means associated with the toggle lever and the base, said base having a downwardly-extending abutment on its second end, bending force applying means operatively engaged with said abutment in the lower end of the toggle lever, and caster wheel means on and extending downwardly from the base and supporting the base rollably upon and spaced above a surface, comprising a single caster wheel at the first end of the base, and a pair of outriding caster wheels located near to and spaced from the first end of the base, laterally outwardly declining arms fixed to the base having free outer ends carrying said outriding caster wheels.

6. A straightening device comprising a horizontal base having first and second ends, an upstanding pull lever pivoted on the base at said second end and having chain attaching means thereon, an upstanding chain anchor lug at the first end of the base, a vertical toggle lever pivoted on the base at a point near and spaced from the pull lever, a link extending between and pivoted to the pull lever at a point spaced above the base and to the upper end of the toggle lever, said toggle lever having a lower end located below the base, and releasable locking means associated with the toggle lever and the base, said base having a downwardly extending abutment on its second end, and a hydraulic ram extending between and operatively engaged with said abutment and the lower end of the toggle lever, said locking means comprising a locking plate fixed to and extending downwardly from the base and having an arcuate row of detent holes, said detent

5

holes being concentric with the pivotal axis of the toggle lever, and a retractible locking pin mounted on the toggle lever and engageable in a selected detent hole.

7. A straightening device comprising a horizontal base having first and second ends, an upstanding pull lever pivoted on the base at said second end and having chain attaching means thereon, an upstanding chain anchor lug at the first end of the base, a vertical toggle lever pivoted on the base at a point near and spaced from the pull lever, a link extending between and pivoted to the pull lever at a point spaced above the base and to the upper end of the toggle lever, said toggle lever having a lower end located below the base, and releasable locking means associated with the toggle lever and the base, said base having a downwardly extending abutment on its second end, and a hydraulic ram extending between and operatively engaged with said abutment and the lower end of the toggle lever, said locking means comprising a locking plate fixed to and extending downwardly from the base and having an arcuate row of detent holes, said detent holes being concentric with the pivotal axis of the toggle lever, and a retractible locking pin mounted on the toggle lever and engageable in a selected detent hole, said base comprising a tube having top and bottom walls and side walls, said top and bottom walls having longitudinal slots through which upper and lower portions of the toggle lever work.

8. A straightening device comprising a horizontal base having first and second ends, an upstanding pull lever pivoted on the base at said second end and having chain attaching means thereon, an upstanding chain anchor lug at the first end of the base, a vertical toggle lever pivoted on the base at a point near and spaced from the pull lever, a link extending between and pivoted to the pull lever at a point spaced above the base and to the upper end of the toggle lever, said toggle lever having a lower end located below the base, and releasable locking means associated with the toggle lever and the base, said base having a downwardly extending abutment on its second end, and a hydraulic ram extending between and operatively engaged with said abutment and the lower end of

6

the toggle lever, said locking means comprising a locking plate fixed to and extending downwardly from the base and having an arcuate row of detent holes, said detent holes being concentric with the pivotal axis of the toggle lever, and a retractible locking pin mounted on the toggle lever and engageable in a selected detent hole, said base comprising a tube having top and bottom walls and side walls, said top and bottom walls having longitudinal slots through which upper and lower portions of the toggle lever work, said toggle lever having spaced side plates, one of said side plates carrying said locking pin, said locking plate being positioned between the side plates.

9. A straightening device comprising a horizontal base having first and second ends, an upstanding pull lever pivoted on the base at said second end and having a chain attaching means thereon, an upstanding chain anchor lug at the first end of the base, a vertical toggle lever pivoted on the base at a point near and spaced from the pull lever, a link extending between and pivoted to the pull lever at a point spaced above the base and to the upper end of the toggle lever, said toggle lever having a lower end located below the base, and releasable locking means associated with the toggle lever and the base, said base having a downwardly extending abutment on its second end, and a hydraulic ram extending between and operatively engaged with said abutment and the lower end of the toggle lever, said hydraulic ram being removable from the abutment and the lower end of the toggle lever after locking the toggle lever for holding the pull lever in a tensioned pull position.

References Cited in the file of this patent

UNITED STATES PATENTS

2,442,604	Johnson et al. -----	June 1, 1948
2,836,219	Pertner -----	May 27, 1958
2,836,220	Johnson -----	May 27, 1958
2,979,102	Ferguson et al. -----	Apr. 11, 1961
3,026,925	Tuedicke et al. -----	Mar. 27, 1962
3,053,305	Tincourt -----	Sept. 11, 1962